The Trombone Basic Skills For First Year Students at Sias University, HENNAN

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Abstract

The objective of this research was to study the trombone basic skills for first year students at Sias University of Zhengzhou. This study uses qualitative research methods to gather data from influential informants in Zhengzhou, China, to construct and verify basic trombone skills. The sample group includes 21 well-known trombone and brass teachers with over 20 years of experience, strong teaching and research abilities, and published papers. The research tools include structured semi-structured interviews, theme grouping, direct interpretation, and data presentation. The study will be conducted between 2023 and 2024, focusing on pedagogical approaches, performance posture, breathing techniques, lip vibration techniques, tonguing techniques, and bow-drawing techniques.

The research results were found as follows; 1) Knowledge about trombone: history and characteristics of trombone, a versatile brass instrument with a rich, full sound quality suitable for short melodies. China teaches the trombone, which has a range of two and a half to three octaves, using various methods. 2) Trombone techniques include performance posture, breathing technique, lip vibration technique, tonguing technique, and bow-drawing technique. Both left and right hands play critical roles in trombone performances. 3) Aesthetics of performance and evaluation. Chinese aesthetics influence the aesthetics of trombone performance, yet the artistic aspects of trombone performance in China remain largely unexplored. Evaluation of trombone performance in China uses both subjective and objective criteria, and the SmartMusic® assessment feature provides insights into musical elements and performance techniques.

Keywords: Trombone; Basic Skills; Sias University

Introduction

The trombone is an asymmetrical wind instrument in relation to its axis, featuring a rotating element that establishes symmetrical apertures. It is a slide trombone, which consists of a mouthpiece, a body with a tubular bore, and a bell equipped with mechanisms for adjusting the diameter of a portion of the bore. A slide assembly comprised of U-shaped cylinders permits pitch variation and conventional pitch positions on the trombone. The instrument is equipped with axial and radial outflow apertures, which are accessible via the shell's end faces and lateral faces, respectively. The trombone is a crucial instrument in both soloist and band settings, with many places becoming wind bands due to spiritual pursuits. However, many beginners struggle with correct playing methods, leading to accidents and hindering future learning. The history of the trombone in China dates back to the Shanghai Public Wind Band in 1879. The teaching history of the trombone in China spans the early 20th century, divided into three periods: before the People's Republic of China, after liberation, reform and opening up, and after the reform

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and opening up. Each period has its unique development characteristics, laying the foundation for the trombone's development in China. As the mainstream instrument of western music, the trombone has rapidly developed in China, with the teaching process spanning over a century. (Jiang, 2015 : 53)

The trombone was utilised in military signalling, funeral processes, wedding procedures, and imperial processions. It is noteworthy to remark that the abstracts do not explicitly reference the trombone in China subsequent to the Qing dynasty. At the beginning of the 20th century, Chinese intellectuals returned from overseas study, leading to the flourishing of folk western music activities. (Qiu, 2008 : 120-121) The governor of Liangjiang established the "Self-improvement Army" in Nanjing, ordering various Western musical instruments from Germany and hiring German officers as instructors. This period saw the emergence of "concerts" held by Chinese and foreigners, and Chinese musicians began to learn European composition theory and creatively attempt to create. In 1877, the Shanghai Jiangnan manufacturing bureau published the earliest piped music textbooks in modern China, indicating the growing influence of western orchestral music, particularly wind art form, in the late Qing and early republic. The wind band was popularized in palaces, officialdoms, and new schools, promoting aesthetic education and unity cooperation. This contributed to the development of China's music education and the wind process, with a far-reaching influence on the country's music education and wind process.

In the late Qing Dynasty and early Republic of China, school military bands were popular, with the Tsinghua school military band being the most famous. The first four years were called Secondary, with an English drum and flute unit, and the last four were called Advanced, with a brass band with Filipino and White Russian musicians as teachers. Most military music players in big cities were uneducated and had poor musical knowledge. On November 27, 1927, China's first new music institution of higher learning, the Shanghai Conservatory of Music, was founded, marking the beginning of normalization of music education in China and the institutionalization of trombone teaching. In the 1950s, the teaching of trombone in China was still in its infancy, and foreign experts were invited to teach. (Wang, 2011 : 44-45) The PLA military Band invited Kaufman, a former GDR music expert, to conduct and train the band and teach music theory, leading to improved wind music performance and the emergence of excellent wind players. After the Cultural Revolution, art colleges and universities resumed normal teaching order and recruited students. Trombone teaching in China has been further developed by leaps and bounds, with artists like Wagner, Keith Brown, and Hao Jie contributing to the development of trombone teaching and performance in China. (Zhao, 2011 : 180-181)

The number of trombone players is increasing, and more students are starting to learn the instrument. However, new students often neglect the study of theoretical knowledge, leading to difficulties in learning the trombone. This lack of theoretical knowledge affects the learning effect and interest in the instrument. Therefore, trombone theory teaching is crucial. Teachers should teach trombone playing system theory at the beginning of the teaching process to ensure students fully understand the basic knowledge of trombone playing. This foundation helps lay a good foundation for future performance practice, enhances learning effects, and promotes improvement in students' comprehensive quality in later stages.

Research Objective

To study the basic skills of the trombone for first year students at Sias university of Zhengzhou.

Litterature Review

Research by Sluchin & Lapie (1997 : 4-29) Historic slide trombone teaching and method books in France (1794-1960). The french revolution significantly influenced the evolution of education, particularly in the field of wind instruments. The creation of structured classes led to the development of various teaching methods, with a focus on rational intent. The evolution of trombone teaching methods from 1830 forward is particularly remarkable. Authors like Prdhem, Auguste-François-Noël Leonard de la Tuillerie, Adolphe Brulon, and Schiltz contributed to the development of trombone methods. Other notable works include Ed. Hemet's Traité théoriqueet pratique pour apprendre à jouer du trombone en peu de Temps, Blancheteau's Petite méthode de trombone à coulisse, and Guichard's École de fanfare. These books offer comprehensive teaching methods for various instruments, including the slide trombone. A. Boscher's Méthode générale d'enseignement aimed to teach simultaneous training on wind instruments, focusing on the formation of a brass band or wind orchestra in a short period of time. Paul Delisse's Opuscule rudimentaire et classique provided a position chart for the improved tenor slide trombone and valve trombone. Georges Tilliard's methods focused on windband repertoire, while Gabriel Parès' elementary methods focused on learning wind instruments quickly. Léon Fontbonne's method of complète, théorique, and pratique de trombone à coulisse and à pistons alternated scales, exercises, and studies for the two types of trombone. Other methods, such as those by E. Cam, Jules Javelot, and Louis Adolphe Vimeux, are lost and little is known about their authors.

Johnson (2010 : 2-3) present the fundamental approach to trombone technique: a comprehensive strategy for addressing common technical deficiencies in trombone performance in Ball State University. This article explores the multiphonic sounds produced by playing a note on a brass instrument while simultaneously singing another note in the mouthpiece. These sounds are often heard as a chord or cluster of more than two notes and are used in various artistic contexts. Measurements of mouth pressure, mouthpiece pressure, and radiated sound are recorded during a trombone player's performance, showing the quasi-periodic nature of the multiphonic sound and the appearance of combination tones due to intermodulation between the played and sung sounds. Time-domain simulations of multiphonics are conducted to assess the physical model's ability to reproduce the measured phenomenon. The author of the dissertation has studied and taught trombone technique for over twenty years and has identified four fundamental components of trombone performance: breathing and air support, embouchure control and flexibility, slide precision and timing, and articulation. The project includes written discussions, musical exercises, and audio demonstrations to address common deficiencies in trombone technique and provide a clear explanation of the fundamental components.

Research by Jiang (2015 : 53) supported the trombone's trill performance is unique from other instruments, as it is completed by the mouth, which is challenging for students. To help students reduce the difficulty of playing the trombone, it is essential to study and explore the skills of lip trill performance in trombone performance. This will help students master these skills and improve their learning growth. By guiding students to correctly master trill performance skills, we can help them improve their trombone playing level and enhance their overall performance. This will help students overcome the challenges of playing the trombone and achieve a higher level of musical proficiency.

Gendrich (2003 : ii-iii) Teaching and learning jazz trombone, the dissertation of the doctor of philosophy at Ohio State University. The study aimed to identify and assess the methods of teaching and learning jazz trombone improvisation by jazz trombone professors. Focuses on providing a detailed strategy to address common technical issues in trombone playing. The study delves into professional development, curriculum guidelines, articles, and instructional aids related to trombone technique. It emphasizes the importance of addressing technical deficiencies in trombone performance through a comprehensive approach. The research offers valuable insights into improving trombone playing by tackling common technical challenges effectively. A survey instrument was designed after interviewing 20 professional jazz trombonists, and 377 professors were sent questionnaires. Of the 106 respondents, 58 were eligible participants as both trombonists and teachers of jazz improvisation. Three areas were explored: early stages of development, teaching, and trombone technique. The data showed that 77% of professors had learned to improvise between 7th-12th grades. The most important method of learning for them was listening and playing-along with recordings. Schools (K-12) were not strongly rated as helpful in trombonists learning to improvise (2.49 on a scale of one to five), but they provided many jazz performance experiences. Teachers ranked listening and playing-along with recordings as the most important method of teaching beginning jazz trombonists to play jazz. For intermediate and advanced college students, learning scales, licks, and patterns were viewed as most important. Listening and playing-along was ranked second, with using books and other published materials ranked third. Teachers reported that the teaching of technical skills was important to the development of their students, especially in the first two years of jazz trombone study.

Velut et al. (2016 : 2876-2887) this article examines the multiphonic sounds produced by playing a note on a brass instrument while simultaneously singing another note in the mouthpiece. These sounds are often heard as a chord or cluster of more than two notes, and are used in various artistic contexts. Measurements of mouth pressure, mouthpiece pressure, and radiated sound are recorded during a trombone player's performance of a multiphonic. Results show the quasi-periodic nature of the multiphonic sound and the appearance of combination tones due to intermodulation between the played and sung sounds. Time-domain simulations of multiphonics are conducted to assess the ability of a given brass instrument physical model to reproduce the measured phenomenon. The simulated pressure matches the measured one well, but at a high forcing pressure.

Therefore, with the continuous development of The Times, the application scope of trombone is becoming more extensive, and the number of trombone learners is increasing. To teach trombone well and make students achieve musical training, adequate analysis of the teaching method of trombone is necessary. The article by Yi et al. (2023 : 36-45) also proposesthe academic paper proposes a new practical hybrid teaching method (NPH) at Shanxi Arts Vocational College to improve basic trombone skills. The method focuses on developing

basic skills like adjusting mouth shape, wind, and pitch. During the COVID-19 outbreak, teachers and students were separated, so online teaching was used to address this issue. The researchers reviewed the skills teaching document and proposed various teaching methods to modify or improve key trombone skills, including practical teaching, demonstration music teaching, digital music teaching, reflective music teaching, and life skills for psychosocial competence. The seven principles suggested for teachers to adapt to their traditional schools are also discussed.

In addition author, Sobnosky (2016 : 2) Challenges in Beginning Trombone Pedagogy. The development of strong fundamental skills is crucial for success on any instrument, especially the trombone. Each instrument presents unique challenges, such as size, slide, and technique, which can lead to problems that music educators must address. This project interviewed six experienced teachers about common problems in trombone pedagogy. The paper examines three concepts: breathing, slide technique, and the slur, which young trombonists struggle with. It presents exercises to address these issues, detailing the correct technique for each concept, describing common errors made by students, and explaining the corresponding exercises in the appendix. This helps young trombonists develop good playing habits and basic skills that form the foundation of strong musicianship.

Trombone technique encompasses a range of skills and approaches to playing the instrument. It involves the use of various techniques, such as the single-spit method and the double-spit method. The development of trombone techniques over the twentieth century has expanded the performance vocabulary for the instrument, including the use of voice, mutes, theatricals, electronics, microtones, and technical virtuosity. The self-sustained oscillation of a brass wind musical instrument, such as the trombone, involves a complex aerodynamic coupling between a multimode mechanical vibratory system (the lips of the player) and a multimode acoustical vibratory system (the air column of the instrument). By studying prominent performers and composers, the changing role of the trombone in ensemble performance, and influential works, the expansion of trombone techniques can be identified. Music teacher educators can incorporate elements of experimentation, mistake-making, and creativity in brass techniques courses to provide preservice music educators with opportunities for independent learning and problem-solving.

Research Methodology

1. Research methods: This study employed qualitative research methods to collect data from highly influential informants, selected according to predetermined criteria. After that, specialists from brass academic institutions used the data to construct the basic skills of the trombone and verified their correctness. The basic trombone skills are conceptual. Study in the Zhengzhou area of Henan Province, China.

2. Research sample group: the researcher contacted 21 well-known trombone and brass teachers. After that, the experts selected themselves and made recommendations among themselves. The key informants from educational institutions, according to the criteria of ability and experience—over 20 years of experience in music education—hold an associate professor or higher title, have strong teaching and research abilities, have published over 5 papers, and are a Master's or above supervisor. The key informants, seven high-level experts, were willing to be interviewed.

1) Li Jinpeng (personal communication dated August 12, 2023). Associate Professor of Trombone in the Orchestra Department of Tianjin Conservatory of Music, Supervisor of Master Students;

2) Yan Yu (personal communication dated August 18, 2023). Associate Professor of the Orchestral Department, Xinghai Conservatory of Music, Graduate Instructor of Bass Brass, Ph.D.

3) Zhao Ruilin (personal communication, August 8–9, 2023). Members of the Ministry of Education's Art Education Committee;

4) Cao Yunfeng (personal communication, August 26, 2023). Director of the Orchestra Teaching and Research Department, School of Music and Dance, Yantai University. Associate Professor of Trombone and Tuba;

5) Lang Qun, (personal communication, Aug 18, 2023). Bass trombone player. Masters, University of Canberra, Australia. Deputy Director, Department of Instrumental Music, Jiamusi University. Associate Professor.

6) Lv Linfeng, (personal communication, Aug 15, 2023). I graduated from the Central Conservatory of Music. Trombone teacher, School of Music and Drama, Zhengzhou Sias University. University of Arizona Chinese trombone teacher;

7) Cui Yanbin (personal communication, August 21, 2023). Associate professor of trombone and tuba at the School of Music of Henan University, tutor of postgraduate students, doctor of trombone, post-doctoral student of education, principal trombone of the Zhengzhou Philharmonic Orchestra.

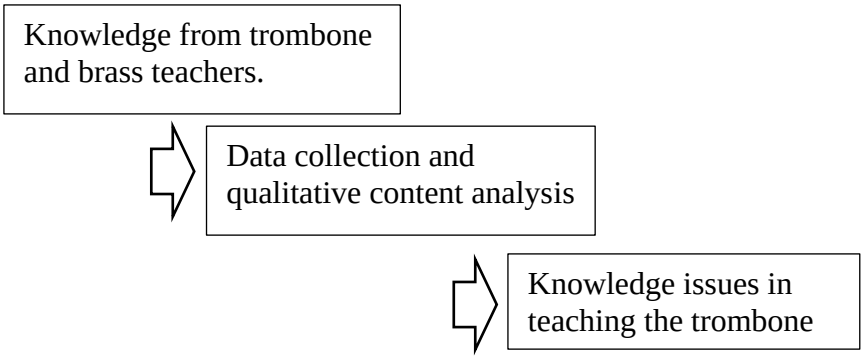
3. Research tools: The researcher's structured semi-structured interview form is one of the study instruments created by the researcher according to its purpose and conceptual framework. The researcher used the interview guideline as the primary research tool to gather in-depth insights from trombone and brass teachers in educational institutions. The questions focused on pedagogical approaches, performance posture, breathing technique, lip vibration technique, tonguing technique, and bow-drawing technique.

4. Data collection: Semi-structured interviews, theme grouping, direct interpretation, and data presentation were the methods used for data collection. The study will be conducted between 2023 and 2024.

5. Data analysis: focus on trombone basic skills content on pedagogical approaches, performance posture, breathing technique, lip vibration technique, tonguing technique, and bow-drawing technique. The simplified approach anchored the findings in the experiences and insights of trombone and brass institutions.

Research Conceptual framework

From the study, it can be created into a conceptual framework as shown in the picture.



Picture 1 Research Conceptual framework

Research Results

The objective of this study is to examine the fundamental skills of trombones among first-year students at Sias University of Zhengzhou, Hennan. Following the arrangement of interviews with seven important key informants, the researcher gathered data on various topics, verified the material, and included it into the subsequent study conclusions. As it is a basic issue in teaching the trombone, in addition to being general knowledge, it is also an issue of concern regarding the future trend of teaching the trombone and brass instruments in China.

1. Trombone: The trombone is a brass family instrument classified as a mid-bass. It possesses a brilliant, solemn, high, and complete tone, as well as a dazzling and potent sound. Played lightly and with a unified intonation, the trombone is capable of generating euphemistic and delicate tones. It is performed using methods including the single-spit and double-spit techniques. By employing zero-crossing rate and short-time auto-correlation investigations, the intonation information of the trombone audio signal can be accurately captured. The trombone is an asymmetrical wind instrument in relation to its axis, featuring a rotating element that establishes symmetrical apertures. It is a slide trombone, which consists of a mouthpiece, a body with a tubular bore, and a bell equipped with mechanisms for adjusting the diameter of a portion of the bore. A slide assembly comprised of U-shaped cylinders permits pitch variation and conventional pitch positions on the trombone. The instrument is equipped with axial and radial outflow apertures, which are accessible via the shell's end faces and lateral faces, respectively.

Trombone in China: Consequently, the trombone was referred to by two terms in China during the Qing dynasty (1644-1912) straight form called laba or xiao tongjiao, and another form with a telescoping barrel-shaped bell called da tongjiao or hao-t'ung. These trumpets were used for various purposes, such as funerals, wedding processes, imperial processions, and military signaling. The Chinese system of musical notation was primarily used for intellectual music, while popular music was transmitted orally from one generation to the next. Confucian ceremonial music has been performed in China and Taiwan, aiming to recreate the original music using written documents, although new elements have been incorporated.

The development of brass smelting technology in China can be divided into three stages: occasional brass, cementation brass, and speltering brass. Traditional Chinese music has distinctive characteristics and is a blend of classical and popular music, carrying historical information that helps identify and verify its original tonalities. The trombone was used in military signaling, funeral processes, wedding procedures, and imperial processes. It is noteworthy to remark that the abstracts do not explicitly reference the trombone in China subsequent to the Qing dynasty.

Before the People's Republic of China, trombone teaching in China began to develop, but faced challenges due to the lack of teachers and teaching materials. Most players were self-taught, with no well-known players or good tutorials. The establishment of music discipline led to the rise and development of the trombone, with more people studying the instrument. Teachers ran schools, set up wind bands, and wrote trombone courses, music books, and magazines. Folk western music activities flourished with the return of Chinese intellectuals from studying abroad. Zhang Zhidong established the "Self-Strengthening Army" in Nanjing, ordering western instruments and hiring German officers as instructors. In 1900, Nanjing Liangjiang Normal School opened, hiring Japanese and German teachers to teach music theory and wind music. In 1903, Yuan Shikai opened a military music school in Tianjin, sending people to Germany to study music. The emergence of new-style music society journals and the popularity of wind music in China during the late Qing Dynasty and early Republic of China contributed to the development of Chinese music education and wind music.

In the late Qing Dynasty and early Republic of China, military bands were popular, with the most famous being the Tsinghua School's military band. The military band was a secondary course, with English drum and flute teams for the first four years, and an advanced course with a brass band employing Filipino and White Russian musicians. Most military musicians were uneducated and had poor musical knowledge, so they learned simple musical scores through exploration and practice. In 1927, the National Conservatory of Music was founded, marking the formalization of music education in China and the formalization of trombone teaching. Dr. Xiao Youmei, president of Nanjing National Government College, set up the first music college in China, aiming to replace religion with aesthetic education. The institution has since become a famous music institution in China, establishing the strategic trend of modern Chinese professional music. The history of Wuhan Conservatory of Music dates back to 1920, with the establishment of the trombone performance major in the early days. The Xinghai Conservatory of Music, founded in 1985, also offers a trombone program. These institutions have significantly contributed to the cultivation of professional music talents and trombone performers, providing professionals for higher education institutions and professional orchestras.

In the early 1950s, the teaching of trombone in China was still in its early stages, with foreign experts like Kaufmann and Luo Lang assisting. The Chinese People's Liberation Army Military Orchestra invited Kaufmann to conduct training and teach music theory, leading to improved wind music performance. After the National Day Parade in 1952, top military musicians were sent to the Shanghai Symphony Orchestra and Shanghai Conservatory of Music, which became the first class of the Military Music school. After the Cultural Revolution, major art colleges restored normal teaching order and recruited students, further developing trombone teaching in China. Trombone masters like Wagner and Giesbraun were invited to give performances and lectures, promoting the development of trombone teaching and performance. Zhao Ruilin, who graduated from the trombone major programme of the

Orchestra Department of the Central Conservatory of Music in 1982, studied in Germany and brought advanced trombone playing methods back to China. Hao Jie, an American trombonist, studied trombone with various orchestras and universities, eventually becoming the chief trombone of the China Philharmonic Orchestra in 2000. He later taught at the Central Conservatory of Music, bringing advanced trombone technology and new thinking back to China. Currently, many trombonists studying abroad have learned advanced trombone playing methods and brought them back to China, contributing to the development of the trombone.

2. Structure of the Trombone: The trombone is a musical instrument made up of a cylindrical tube, a U-shaped expansion tube, and a folding mechanism. The horn tube has a cup-shaped nozzle and gradually expands into a mouth. The U-shaped expansion tube is inserted into the number tube, and the folding mechanism is located between the port and the expansion tube. The U-shaped expansion tube has seven handles, with each extension lowering the tone by half. Players use their right and left hands to control the U-tube, change the tube's length, and play different keynote pitches, as follows: 1) Tuning Slide, 2) Counterweight, 3) Mouthpiece, 4) Slide Lock Ring, 5) Bell, 6) Knob/Bumper, 7) Water Key/Spit Valve, 8) Main Slide, 9) Second Slide Brace/Stay, 10) First Slide Brace/Stay, and 11) Bell Lock Nut.

Characteristics of the Trombone: The trombone is a versatile instrument with a cylindrical bore, an annular mouthpiece, a horseshoe slide tube, and seven handles. It uses the bass clef with C-notation and has a range of two and a half to three octaves, divided into five zones: the lowest zone, bass register, middle zone, strong zone, and weak zone. The trombone's high voice is brilliant and powerful, while the highest vocal area is tense and has poor sound quality. Three commonly used trombones are bB-F bass trombone, bB alto trombone, and bE alto trombone. The trombone's sound quality is thick and full, but it is relatively heavy, making it suitable for short melodies. To achieve a strong and rich sense, two to three trombones are used. The muffler plays a significant role in the trombone playing technique, with glissando being a unique technique. There are five types of playing techniques: Lip, Slurs, Cross-Grain Slurs, Tongued Slurs, Valve Slurs, and Glissando. The trombone was originally used for practical purposes like war, sacrifice, and hunting, and its unique musical characteristics have been discovered and continued over time. It is now an indispensable and important part of the voice of the brass instrument, with its round and rich sound quality providing unlimited enjoyment.

Trombone Historical Overview

1) Trombone is a mid-bass brass instrument with a brilliant, solemn, high, and complete tone.

2) Used in various purposes in China, including funerals, weddings, imperial processions, and military signaling.

3) Traditional Chinese music blends classical and popular music.

4) Trombone teaching in China began before the People's Republic of China, but faced challenges due to lack of teachers and teaching materials.

5) The establishment of music discipline led to the rise and development of the trombone cause.

6) The National Conservatory of Music was founded in 1927, formalizing music education in China and trombone teaching.

7) Teaching of trombone in China began in the 1950s with foreign experts like Kaufmann and Luo Lang.

8) Post-Cultural Revolution, major art colleges restored normal teaching order and recruited students, further developing trombone teaching.

9) Trombone masters like Wagner and Giesbraun were invited to give performances and lectures, promoting the development of trombone teaching and performance.

2. Trombone Basic Skills

From the interview key informants, trombone basic skills can be summarised in 5 points: performance posture, breathing technique, lip vibration technique, tonguing technique, and bow-drawing technique, as follows:

2.1. Performance posture: The trombone can be played in two positions - standing and sitting.

Standing posture: The majority of the solitary performance or individual practice is conducted in the upright position. Presently, the left hand is grasping the number, while the right hand is holding the handle. The thighs are spaced slightly beyond the breadth of the shoulders, and they may intermittently move forward and backward.

Sitting posture: The sitting position is predominantly used during ensemble performances. Sit in the front of the seat while playing, with your feet flat on the ground, and breathe slightly while leaning forward. Typically, they assume seats on the left rear section of the music stand, which facilitates the forward transmission of sound.

Trombone performance posture is an important aspect for musicians to consider in order to reduce the risk of work-related injury and optimize their playing. Recent advancements in instrument design and orchestral working conditions have increased the physical challenges of playing the trombone. Research has shown that playing posture can have an impact on the respiratory mechanics of wind musicians, including chest and abdominal expansion and muscle activation. Additionally, studies have found that listeners entrain their postural sway to the movements of trombonists during performances, suggesting that the whole body contributes to the expressive content of musical communication. While there is no specific mention of the exact posture for trombone performance in the abstracts provided, it is clear that considering both physical and psychological factors, as well as the interplay between them, is crucial in understanding and optimizing trombone performance.

2.2. Breathing technique: The sound of the trombone is controlled by the player's breath, which is considered the energy of the instrument. Smooth control of the breath is crucial for a professional trombone player. To achieve this, the upper body should be relaxed, and the waist, abdomen, and chest should be expanded outward to facilitate proper breath use. The abdomen and waist should feel relaxed, while the front chest and back should feel relaxed. The breath is transformed into playing power through breathing activities, so the performer must choose the appropriate mode to make the breath smooth. There are various types of breathing, including abdominal, chest, and thoracic-abdominal breathing, depending on the source of respiratory activity. Most trombonists breathe in a thoracic-abdominal fashion, contracting the diaphragm under the lungs, alveolar pressure down the abdominal cavity, and expanding the abdominal muscles, intercostal, and psoas muscles. This breathing technique also improves vital capacity, with the average adult male vital capacity being around 3800 ml, the average adult female vital capacity around 3000 ml, and the lung capacity of the trombone reaching over 5000 ml.

2.3. Lip vibration technique: The correct mouth shape is crucial for the trombone, as it affects timbre, intonation, tone quality, breath length, and strength changes. Beginners should start with mouth practice to lay a solid foundation for future playing. The mouth shape is a complex concept that includes the coordination of lip muscles, jaw bones, teeth, and jaw parts. Each player's innate conditions, such as lip thickness, tooth uniformity, and jawbone shape, vary. Trombone learners should analyze their own conditions and select the most suitable mouth shape. To begin playing, the horn should be placed in the middle of the player's lips, with a 5:3 and 3:2 lip ratio. The horn angle should be slightly tilted downward, controlled at 75 degrees, to improve breath gathering and divergence. Mastering the mouth shape is essential for trombone playing, and learners should practice repeatedly under professional guidance. Changes to the mouth shape cannot be made at will, as it can affect learning progress. Additionally, players should pay attention to dull or bright sounds due to tension in gills and lips muscles. The lip vibration technique involves moving the lips forwards due to higher air pressure in the mouth.

2.4. Tonguing technique: The professional level of a performer is primarily determined by their ability to play music quickly. The trombone, played through a U-shaped slide, requires a specific tongue speed to blow each note neatly and convey the emotion of the music to the audience. Proper tongue placement is crucial, with the tongue spreading flat in the mouth and the tip touching the root of the incisor. The tongue should remain motionless, slightly lower in the middle band, and slightly touching the tooth in the bass band. To improve tongue movement, practice regularly, starting with easy exercises and gradually increasing difficulty until playing difficult notes neatly and without procrastination.

2.5. Bow-drawing technique: The trombone has seven positions, each with half a tone difference. The first position is the 1 in bB, followed by the second, fourth, and sixth positions in the lower octave of the lower bB, and the seventh position is 4 up in the lower octave of the lowest bB. To maintain a smooth bass gradient, slowly move from one to seven notes with lower mouth vibrations. The third position has full timbre and easy switching, playing 6 and 7 in both the lower and higher octaves. Controlling the position in place can enhance the sound effect, but requires long-term training. The left and right hands play crucial roles in the trombone. The left hand holds the horn, adjusts and stabilizes the player's angle during practice, and maintains a slight downward tilt. The right hand holds and pulls the handle, with the thumb, index, and middle finger placed on the joint of the transverse stop tube and slide tube. The middle and ring fingers gently grip the slide tube to prevent it from falling, while the thumb can leave the transverse tube.

In summary, trombone techniques skills include:

1) Comprehension and proficiency in trombone techniques are of paramount importance in the field of music.

2) In both standing and sitting positions, the trombone can be played.

3) The mastery of breathing technique plays a crucial role in the regulation of the brass sound.

4) Different breathing techniques are employed, such as abdominal, chest, and thoracic-abdominal.

5) The lip vibration technique has an impact on the timbre, intonation, tone quality, breath length, and change in strength.

6) The correct alignment of the mouth is of utmost importance when playing fast music.

7) Proficiency in tonguing is essential for deftly playing fast music.

8) It is crucial to position the tongue correctly, ensuring that it is spread out flat in the mouth and that its tip makes contact with the root of the incisor.

9) The enhancement of tongue movement necessitates consistent and repetitive practice.

10) The trombone consists of seven distinct positions, each with a tone difference of half a tonne.

11) In the context of trombone performance, both the left and right hands assume distinct roles.

3. Aesthetics of performance and evaluation.

Aesthetics of trombone performance: The examination of musical elements such as glissandi, sustained notes, transients, crescendos, and decrescendos constitutes the artistic aspects of trombone performance. The examination of these factors involves the utilisation of acoustical techniques and a Matlab toolbox for Music Information Retrieval (MIRtoolbox) to measure envelopes, spectra, and spectral centroids. The performance of the trombone is also contingent upon auditory feedback, as evidenced by a correlation observed between musical experience and reliance on auditory feedback. Lack of auditory feedback can interfere with performance, especially during pitch bending exercises, and can result in playing "oddly". Furthermore, the 20th century has witnessed the emergence of novel techniques and methodologies in the realm of solo trombone compositions, encompassing the utilisation of vocal elements, multiphonic and microtones, as well as electronic components. The incorporation of theatrical elements, including lighting, make-up, costume, stage direction, and audience interaction, has become increasingly prevalent in trombone compositions.

The performance aesthetics of the Trombone in China are shaped by the distinctive attributes of Chinese aesthetics, which place emphasis on the subjective encounter with beauty and the appreciation of objects for their inherent beauty. Nevertheless, there is a scarcity of information pertaining to the artistic aspects of trombone performance in China. The abstracts presented encompass a range of facets pertaining to Chinese aesthetics, including the broader realm of music performance aesthetics, the social and political implications inherent in performance art, and the examination of a particular Chinese art song. The abstracts presented offer valuable perspectives on the wider framework of aesthetics in China, yet they do not specifically delve into the realm of trombone performance's aesthetics. Additional investigation and examination are required in order to comprehensively comprehend the artistic aspects of trombone performance in China.

Evaluation of trombone performance: Troon performance evaluation encompasses both subjective and objective criteria. Topical criteria encompass various elements, including articulation, rhythm, tone, intonation, and musicianship/style. In contrast, objective criteria possess a restricted scope as they solely assess specific components, such as accurate or inaccurate annotations. The SmartMusic® assessment feature utilizes a set of objective criteria to assign grades, leading to a clear division between high and low grades. Nevertheless, this method neglects to tackle prevalent challenges encountered by trombone students and could lead to a failing grade for specific matters that a human assessor would only slightly alleviate. Moreover, the absence of auditory feedback can exert an influence on the performance of trombones, with professionals exhibiting a lesser degree of impact compared to amateurs.

Acoustic methods can be employed to assess trombone performance, offering valuable insights into musical elements and performance techniques.

The evaluation of trombone performance in China entails the utilisation of SmartMusic® software, which offers assessment functionalities for the purpose of evaluating student performances. The software uses a restricted set of objective criteria to allocate grades, leading to a clear division between high and low grades. Nevertheless, it neglects to tackle prevalent issues faced by trombone students and lacks the capacity to offer feedback for subsequent performances. Furthermore, the analysis of trombone performance involves the utilisation of acoustical methods, which integrate scientific analysis with musical expertise. The aforementioned techniques encompass the quantification of envelopes, spectra, and spectral centroids in order to investigate various elements, including glissandi, sustained notes, transients, crescendos, and decrescendos. The findings illuminate prior research and offer valuable understanding of trombone performance from a performance standpoint. In general, the assessment of trombone performance in China necessitates the utilisation of technological instruments and acoustical analysis to evaluate student performances and enhance comprehension of the instrument's capabilities.

In summary, trombone aesthetics of performance and evaluation include:

1) Influenced by Chinese aesthetics, emphasizing subjective beauty encounters.

2) Scarcity of information on artistic aspects of trombone performance in China.

3) Evaluation of Trombone Performance

4) Subjective and objective criteria used for evaluation.

5) Topical criteria include various elements, while objective criteria assess specific components.

6) SmartMusic® assessment feature uses objective criteria but lacks feedback for subsequent performances.

7) Acoustic methods can provide insights into musical elements and performance techniques.

Discussion

The relationship history of the trombone in the West and China is explored in various papers. In the West, the trombone and its music were prominent in the 17th and 19th centuries, with writings about the trombone found in treatises, encyclopaedias, and dictionaries from the 18th century. France had a significant influence on the trombone in choral music, opera, and the concert orchestra. Wang (2011 : 45–55) and Wang (2017 : 42-45) the opening to Western music is an ancient phenomenon, but the country's transformations since the 1980s have had consequences for its musical exchanges with Europe. These exchanges are often dependent on public initiatives and do not follow market logic, making it difficult to bring European artists and professionals to China. The articles of Sluchin & Lapie (1997 : 4–5) the European ignorance of the diversity and richness of Chinese music is also highlighted, along with efforts to reduce this ignorance through experimentation. The articles of Yang (2003 : 1) and Jing (2015 : 94) touch upon various aspects, such as the cultural ferment between China and the West, the intention of returning to past fashion, and the choice of musical culture and education in both regions. Additionally, the development of music education in China and Western countries is seen as inseparable from the basic educational concepts of each country. While China can learn from the educational ideas of other countries, it cannot completely copy them,

but rather improve its own educational system. However, Rodríguez et al. (2023 : 1-2) is important to note that none of the abstracts specifically focus on the relationship characteristics of the trombone in the West and China.

The basic skills of the trombone in China have been explored in several studies. The study investigated the relationship between fundamental movement skills (FMS), perceived competence, enjoyment, and physical activity (PA) among Chinese school children. Chan et al. (2019 : 229-236) provide a classification of the trombone and discuss basic playing skills such as the single spit method and the double spit method. Boutin et al. (2015 : 1195-1209) Boutin, Fletcher, Smith, and Wolfe conducted an experimental study investigating trombone players and found that the sweeping motion of the lips contributes to the total flow into the mouthpiece, and the observed lip motion is consistent with two- degree-of-freedom models. These studies provide insights into the techniques and mechanics involved in playing the trombone, which are essential for developing basic skills.

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The aesthetics of trombone performance involve a combination of technical skill and expressive intent. Kristensen (2014 : a) The performers use acoustical methods to analyze various aspects of trombone performance, such as glissandi, sustained notes, transients, crescendos, and decrescendos. Gendrich (2023 : a) analyzes provide a visual description of musical factors in trombone performance and help bridge the gap between scientific understanding and musical experience. Additionally, Qiu (2008 : 120-121) and Reider (2012 : a) found a significant increase in the number of solo and chamber pieces for trombone that incorporated theatrical elements, such as lighting, make-up, costume, stage direction, and audience interaction. These pieces have been gathered into an annotated collection, which provides detailed descriptions of the theatrical elements used and assigns a theatricity rating to each piece. Sobnosky (2016) and Sluchin & Lapie (1997 : 4-29) have also explored different techniques and methods in modern solo trombone works, including the use of voice,

multiphonics, microtones, and electronics. These developments have expanded the repertoire and performance practices of the trombone.

Evaluation of trombone performance involves both subjective and objective criteria. Subjective criteria include aspects such as articulation, rhythm, tone, intonation, and musicianship/style. Objective criteria, on the other hand, are limited and only evaluate certain elements, such as correct or incorrect notes. Yi et al. (2023: 36-45) The new practical hybrid teaching method, the Smart Music® assessment feature, for example, assigns grades based on these limited objective criteria, resulting in a dichotomy of high and low grades. However, this approach fails to address common problems faced by trombone students and may result in a failing grade for issues that a human evaluator would only marginally reduce the grade for. Velut et al. (2016 : 2876-2887) auditory feedback deprivation can have an impact on trombone performance, with the effects being greater for music performed from notation compared to music performed from memory. The evaluation of trombone performance can be approached through acoustical methods, combining scientific analysis with musical expertise to gain a better understanding of the factors involved.

Conclusion

From the study study explores the fundamental skills of trombones among first-year students at Sias University of Zhengzhou, Hennan. The trombone is a versatile brass instrument with a cylindrical bore, annular mouthpiece, horseshoe slide tube, and seven handles, used in various Chinese ceremonies such as funerals, weddings, imperial processions, and military signaling. It has a rich, full sound quality and is suitable for short melodies.

Trombone basic skills include performance posture, breathing technique, lip vibration technique, tonguing technique, and bow-drawing technique. Performance posture is crucial for reducing work-related injuries and optimizing playing. Breathing technique involves smooth control of the breath, while lip vibration involves correct mouth shape, which affects timbre, intonation, tone quality, breath length, and strength changes. Tonguing technique requires a specific tongue speed to blow each note neatly and convey the emotion of the music to the audience.

Trombone techniques involve understanding and mastering breathing techniques, lip vibration techniques, correct mouth alignment, tonguing, and tongue movement. Both left and right hands play crucial roles in trombone performance. The aesthetics of trombone performance are influenced by Chinese aesthetics, emphasizing subjective beauty encounters. However, there is a scarcity of information on the artistic aspects of trombone performance in China. Evaluation of trombone performance in China uses both subjective and objective criteria, with topical criteria covering various elements and objective criteria assessing specific components. Acoustic methods can provide insights into musical elements and performance techniques. Overall, the assessment of trombone performance in China requires the use of technological instruments and acoustical analysis to enhance comprehension of the instrument's capabilities.

Suggestion

The suggestion of research: It is imperative to subject research findings to rigorous testing or re-examination prior to their implementation. The scope of the study can be broadened by incorporating alternative instruments. The framework that has been developed should be expanded to encompass additional areas of study.

The data collection suggestion: It is advisable to utilise in-depth interviews alongside observations and fieldwork, and it is possible to analyze the data multiple times.

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